

ENGINEERING CHANGE PROPOSAL (SHORT FORM) <i>(See MIL-STD-481 for instructions)</i>				DATE (YYYYMMDD) 20040429		<i>Form Approved</i> OMB No. 0704-0188																												
				PROCURING ACTIVITY NUMBER N/A																														
The public burden for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THIS ADDRESS.																																		
1. ORIGINATOR NAME AND ADDRESS Kase J. Saylor Southwest Research Institute 6220 Culebra Rd. Bldg. 189 San Antonio, TX 78238				2. CONTRACT NUMBER AND LINE ITEM 3. PROCURING CONTRACTING OFFICER CODE _____ TEL _____																														
4. TITLE OF CHANGE Superscript 'D' in LEAR formula in Attachment I, Note 2.																																		
5. ECP NUMBER MCC 2004		REV _____	AMEND _____	6. CAGE CODE	7. CLASS OF ECP	8. JUST CODE	9. PRIORITY																											
10. SPECIFICATIONS AFFECTED <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>CAGE CODE</th> <th>SPECIFICATION / DOCUMENT NO.</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td></td> <td>PMT 90-S002</td> <td>I</td> </tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>				CAGE CODE	SPECIFICATION / DOCUMENT NO.	REV		PMT 90-S002	I										11. DRAWINGS AFFECTED <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>CAGE CODE</th> <th>NUMBER</th> <th>REV</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>				CAGE CODE	NUMBER	REV									
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12. CONFIGURATION ITEM NOMENCLATURE / TYPE DESIGNATION / WEAPON SYSTEM CODE N/A						13. IN PRODUCTION <input type="checkbox"/> YES <input type="checkbox"/> NO																												
14. LOWEST ASSEMBLY AFFECTED <table border="1" style="width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>NOMENCLATURE</th> <th>PART NO.</th> <th>NSN</th> </tr> </thead> <tbody> <tr> <td>N/A</td> <td> </td> <td> </td> </tr> </tbody> </table>								NOMENCLATURE	PART NO.	NSN	N/A																							
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15. DESCRIPTION OF CHANGE (Attach a document showing [a] existing document paragraph, figure, or table and [b] modified document paragraph, figure, or table with the change incorporated). Superscript 'D' in LEAR formula in Attachment I, Note 2.																																		
16. NEED FOR CHANGE Change needed to properly represent LEAR formula.																																		
17. EFFECT ON ASSOCIATED EQUIPMENT																																		
18. PRODUCTION EFFECTIVITY BY SERIAL NUMBER				19. EFFECT ON PRODUCTION DELIVERY SCHEDULE																														
20. RECOMMENDED RETROFIT EFFECTIVITY		21. ESTIMATED KIT DELIVERY SCHEDULE			22. ESTIMATED COST/SAVINGS																													
23. SUBMITTING ACTIVITY AUTHORIZING SIGNATURE Kase Saylor Signed 11/8/2004				23.a. TITLE Engineer, SWRI																														
24. APPROVAL/DISAPPROVAL a. RECOMMENDED <input checked="" type="checkbox"/> APPROVAL <input type="checkbox"/> DISAPPROVAL																																		
b. APPROVAL <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED		c. GOVERNMENT ACTIVITY PEOSTRI 12350 Research Parkway Orlando, FL 32826-3276		SIGNATURE Perry R. Smith, LTC AD PMLTS		DATE (YYYYMMDD) 20041108																												
d. APPROVAL <input type="checkbox"/> APPROVED <input type="checkbox"/> DISAPPROVED		e. GOVERNMENT ACTIVITY		SIGNATURE		DATE (YYYYMMDD)																												

15a. Existing document paragraph, figure, or table.**Note 2: Direct Fire Weapon Lethality Effects Assessment Routine:**

When a MILES Decoder successfully decodes two (2) Hit Words within an eight (8) Hit Word transmission time interval, it initiates a Lethality Effects Assessment Routine (LEAR) to assess the lethality effects status of the host target based on the decode incident.

There is a range dependency inherent in this implementation. At close ranges, the Decoder can, with high probability of success, decode four (4) pairs of Hit Words out of a received eight (8) Hit Word sequence. The Decoder will initiate the LEAR four times in this case. At long range, due to the lower probability of a successful reception of the transmitted Hit Word signal by the MILES Target System, the Decoder may successfully decoded fewer than four (4) pairs of Hit Words. It probably will initiate the LEAR less than four times.

Since the LEAR is entered more than once, and with high probability, four (4) times at close range, the actual probability for each execution of the LEAR must be set less than the desired single weapon ammunition engagement close range lethality effect status Kill Probability. (One Kill lethality effect status assessment outcome from the multiple LEAR executions is sufficient to kill the target.) The equation relating the two probabilities is:

$$P_k = 1 - (1 - P_w)^D$$

Where P_k = Kill Probability given all Hit Words were received and successfully decoded (close range condition).

P_w = Kill Probability given a single pair of Hit Words were received and successfully decoded.

D = Number of executions of the LEAR given perfect reception and decode.

15b. Modified document paragraph, figure, or table with the change incorporated.**Note 2: Direct Fire Weapon Lethality Effects Assessment Routine:**

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$$P_k = 1 - (1 - P_w)^D$$

$$P_w = 1 - (1 - P_k)^{1/D}$$

Where P_k = Kill Probability given all Hit Words were received and successfully decoded (close range condition).

P_w = Kill Probability given a single pair of Hit Words were received and successfully decoded.

D = Number of executions of the LEAR given perfect reception and decode.